CLAIMS

1. A recombinant pox virus capable of expressing in a host a cell-encoded, tumor-associated antigen.

2. A recombinant pox virus of Claim 1, which is of the species vaccinia.

3. A recombinant pox virus of Claim 1, wherein the tumor associated antigen is encoded by a human oncogene or proto-oncogene.

4. A recombinant pox virus of Claim 1, wherein the tumor associated antigen is encoded by a human oncogene and is rendered inactive with respect to its oncogenic activity.

5. A recombinant pox virus of Claim 1, wherein the tumor antigen is encoded by the neu gene, the ros gene, the trk gene, the kit gene or portion thereof.

6. A recombinant pox virus of Claim 1, wherein the cell-encoded tumor associated antigen is a growth factor receptor or growth factor receptor-like cell surface molecule.

7. A recombinant pox virus of Claim 6, wherein the receptor or receptor-like cell surface molecule is encoded by the c-erbB gene.

8. A recombinant vaccinia virus containing, in a region of the viral genome nonessential for replication of the virus, one or more foreign DNA sequences which encode a cell encoded, human tumor-associated antigen, the sequence or sequences being under control of a vaccinia promoter.

9. A recombinant vaccinia virus of Claim 8, wherein the tumor-associated antigen is encoded by a human oncogene.

10. A recombinant vaccinia virus of Claim 8, wherein the oncogene is neu, ros, trk or kit gene or a portion thereof.

11. A recombinant vaccinia virus of Claim 9, wherein the oncogene is devoid of oncogenic activity.

12. A recombinant vaccinia virus of Claim 8, wherein the tumor associated antigen is a growth factor receptor or growth factor receptor-like surface molecule.

13. A recombinant vaccinia virus of Claim 12, wherein the tumor associated antigen is encoded by the c-erbB gene.

14. The recombinant vaccinia virus ABT9-4.

15. A method of immunizing against a cell-encoded tumor associated antigen comprising the steps of inoculating an individual afflicted with a tumor which expresses the antigen with a recombinant pox virus capable of expressing the cell-encoded tumor associated antigen.

16. A recombinant pox virus of Claim 15, which is of the species vaccinia.

17. A recombinant pox virus of Claim 15, wherein the tumor-associated antigen is encoded by a human oncogene or proto-oncogene.

18. A recombinant pox virus of Claim 15, wherein the tumor associated antigen is encoded by a human oncogene and is rendered inactive with respect to its oncogenic activity.

19. A recombinant pox virus of Claim 15, wherein the tumor antigen is encoded by the neu, ros, trk or kit gene or portion thereof.

20. A recombinant pox virus of Claim 15, wherein the cell-encoded tumor associated antigen is a growth factor receptor or growth factor receptor-like cell surface molecule.

21. A recombinant pox virus of Claim 15, wherein the receptor or receptor-like cell surface molecule is encoded by the c-erbB gene.

22. A method of immunizing an individual against a cell-encoded tumor-associated antigen, comprising inoculating the individual afflicted with a tumor bearing the antigen with a recombinant vaccinia virus capable of expressing the tumor-associated antigen.

23. A method of producing a cell-encoded tumor-associated antigen, comprising the steps of:

a. infecting cells with a recombinant pox virus capable of expressing a cell-encoded tumor associated antigen;

b. culturing the cells under conditions which allow the virus to replicate and to express the antigen; and

c. isolating the antigen from the cells.

24. A method of producing antibody against a cell-encoded tumor associated antigens, comprising the steps of:

a. inoculating an animal with a recombinant pox virus capable of expressing the tumor associated antigen; and
b. isolating serum containing antibody raised against the antigen.

25. A method of producing monoclonal antibody against a cell-encoded tumor-associated antigen, comprising the steps of:
a. immunizing an animal with a recombinant pox virus capable of expressing the tumor-associated antigen;
b. obtaining antibody-producing cells from the animal;
c. fusing the cells with an immortalizing cell to produce fused cell hybrids;
d. selecting fused cell hybrids which produce antibody against the antigen; and
e. growing the selected fused cell hybrids and obtaining antibody secreted by the hybrids.

26. A method of tumor therapy, comprising passively immunizing an individual afflicted with a tumor by administering antibody against an antigen encoded by the tumor, the antibody being produced by the method of Claim 25.

27. A vector for recombination with a pox virus and for incorporation of a DNA sequence encoding a cellular tumor-associated antigen, comprising

a. a prokaryotic origin replication;

b. a pox viral promoter;

c. a DNA sequence for a cell-encoded, tumor-associated antigen under the direction of the pox viral promoter; and

d. DNA sequences homologous to a region of the pox virus genome where the DNA sequence encoding the tumor-associated antigen is to be inserted, the DNA sequences flanking the promoter and DNA sequence for the cell-encoded, tumor-associated antigen at both the 5' and 3' ends.

28. A plasmid vector of Claim 27.

29. A vector of Claim 28, wherein the pox viral promoter is a vaccinia promoter and the flanking DNA sequences are homologous to a region of the vaccinia viral genome which is nonessential for replication of the virus.

30. A vector of Claim 29, wherein the DNA sequences for the cell-encoded, tumor-associated antigen are selected from the group consisting of the neu gene, the ros gene, the trk gene, the kit gene, the c-erbB gene, and portions thereof.

31. The plasmid pEVAC-neu.